
DEPARTMENT OF ENERGY
UNITED STATES OF AMERICA
Cleanup Progress Report
January – March 2001
Fluor Hanford

Contents

Fluor Hanford

Project Hanford Management Contractor:
Fluor Hanford, Inc., A Fluor Global Services Company

Principal Subcontractors:
- **Day & Zimmerman Protection Technology Hanford**
- **Duratek Federal Services of Hanford, Inc.**
- **DynCorp Tri-Cities Services, Inc.**
- **Numatec Hanford Corporation**

Technology Management:
- **Pacific Northwest National Laboratory**

Environmental Restoration Contractor:
- **Bechtel Hanford, Inc.**

2nd Quarter Fiscal Year 2001 Highlights

- **Moved dispersible mixed waste and processing equipment out of the 324 Building's B Cell.**
- **Shipped to Ohio half the excess uranium billets slated to leave Hanford.**
- **Removed five more loads of spent nuclear fuel from the K-West Basin, taking 750,000 curies of radioactivity away from the Columbia River shore.**
- **Repackaged Rocky Flats ash material at the Plutonium Finishing Plant, finishing the job a month early.**
- **Have stabilized more than 10% of PFP's plutonium solutions to date, using methods proven through our collaboration with the Pacific Northwest National Laboratory.**
- **Treated 840,000 gallons of tank wastes, reducing the volume by a factor of 81% in processing at the 242-A Evaporator.**
- **Completed another shipment of transuranic waste to the Waste Isolation Pilot Plant.**
- **Helping DOE rebaseline for deactivation of the Fast Flux Test Facility.**

These are just some of the indicators that our cleanup progress continued on all fronts this past quarter. Other concrete steps forward are also described on the following pages.

Continued

2nd Quarter Fiscal Year 2001 Highlights
(Continued)

Most importantly, everyone on the Fluor Hanford team continues to work safely, averaging less than one lost away workday injury per 4 million hours worked over the past 15 months. Significantly, both our infrastructure and safeguards and security subcontractors have attained Voluntary Protection Program "Star" status.

In addition, we have created a Project Operations Center to better employ Fluor's commercial expertise and strengthen our project management methods. This matrix organization will provide centralized resource pools for engineering, construction, project management, project controls and estimating to support our site-wide teams.

Our expanded role as the central plateau manager and initiative to help DOE with site-wide, integrated schedules also led us to form a Central Plateau Planning and Integration group to bring together lifecycle planning activities, strategic and breakthrough initiatives and accelerated closure teams.

Vice presidents are leading both new organizations.

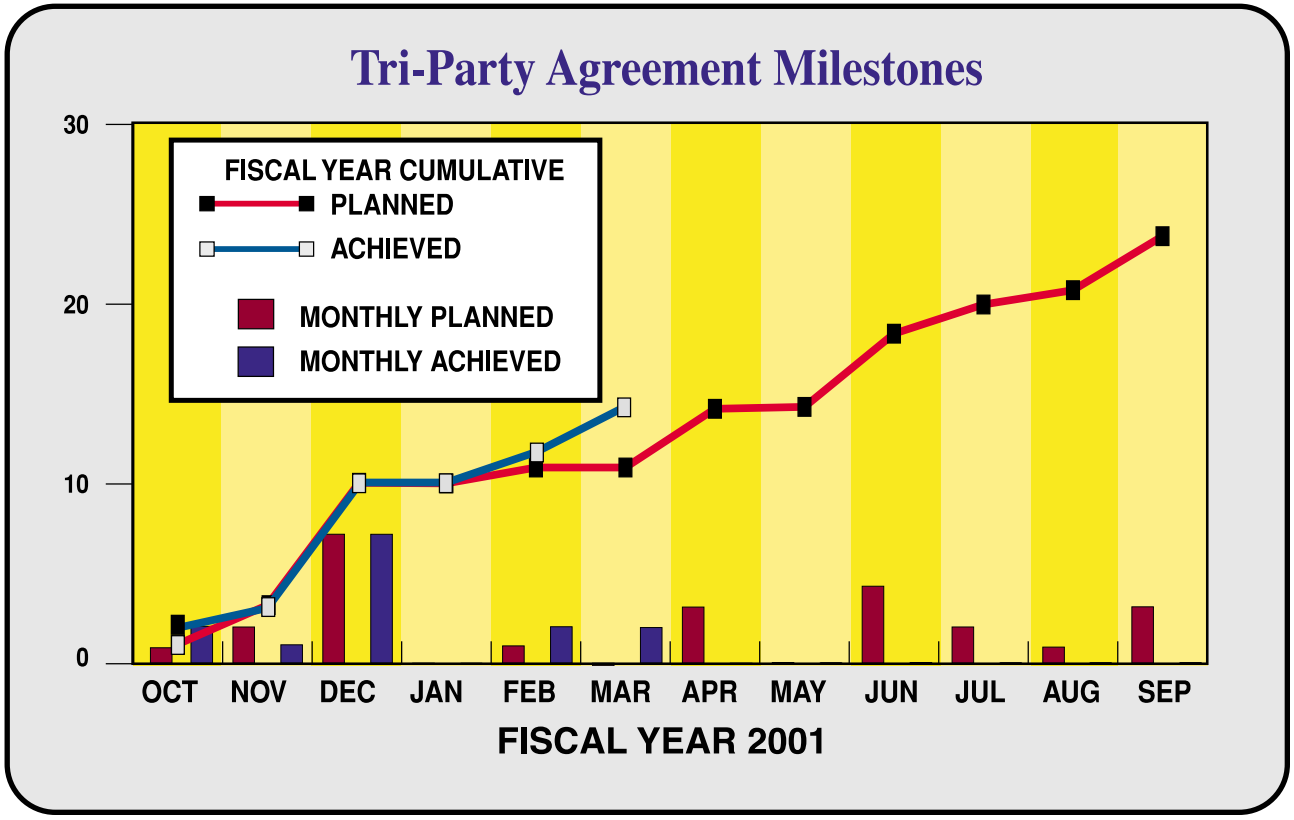
I believe these measures will position us for maximum performance under the terms of our new contract with the Department of Energy Richland Operations Office.

Ron Hanson

President and Chief Executive Officer
Fluor Hanford

Highlights

Tri-Party Agreement milestones achieved this quarter include the interim step of removing the dispersible mixed waste and processing equipment from B Cell in the 324 Building. Cleanout of B Cell is a key component in restoring the river corridor just north of the City of Richland. In addition, we completed the repackaging of Rocky Flats ash material at the Plutonium Finishing Plant a month ahead of the April date called for in the Tri-Party Agreement.



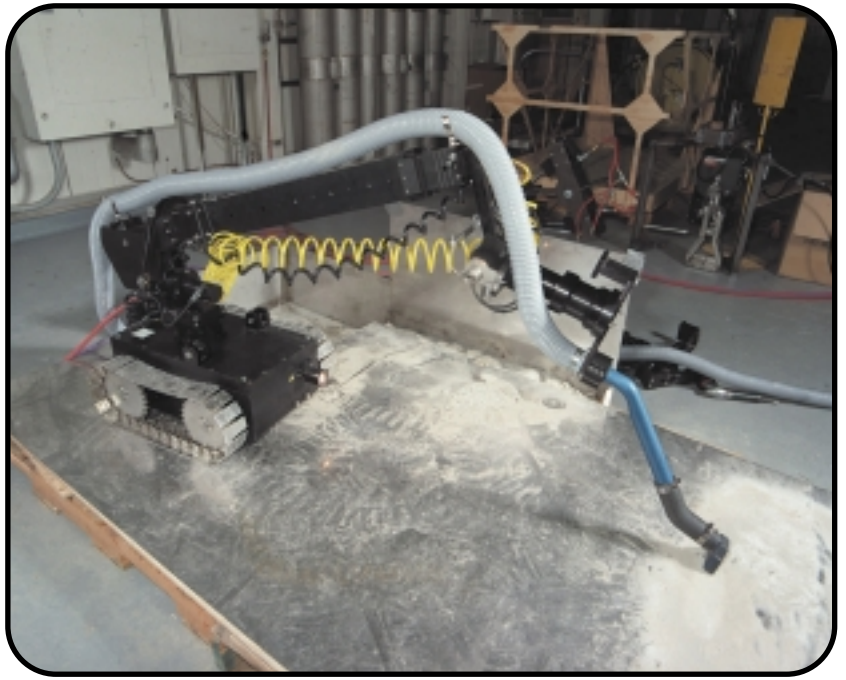
Restoring the River Corridor

Nuclear Energy Legacies

A cold trap that was part of a test loop once located in Building 335, and more recently stored in the high bay of the 337 Building, was prepared for shipping and sent to an offsite waste treatment center in March. The effort represented another step in removing potential environmental hazards out of the 300 Area and away from the Columbia River: the unit contained 200 pounds of sodium metal.

River Corridor Project

Removal of dispersible mixed waste and processing equipment from B Cell in the 324 Building is now complete. The cleanup met an interim target toward completion of Tri-Party Agreement Milestone M-89-02. A new robotic crawler, another example of advanced technology being used for cleanup, shown here during tests of its vacuuming skills, successfully removed highly contaminated dirt, dust, loose chemical residues, vitrified glass and concrete-like materials from the B-Cell floor. B-Cell cleanup this quarter also included shipping the final six of 10 steel waste disposal boxes and four of 22 cylindrical grout containers to the Central Waste Complex.



River Corridor Project

A robotic work platform for 324 Building in-cell and pipe-trench cleanout was delivered March 15 and training initiated. The heavy-duty robot arm will replace the need for manned entries into highly radioactive areas. The robotic platform, selected and tested as a result of the technology teaming between Fluor Hanford, Numatec Hanford and the Pacific Northwest National Laboratory, can utilize a wide variety of tools such as shears, decontamination spray heads and inspection devices and will have sufficient length and dexterity to reach all interior surfaces of the hot cells and pipe trench.

River Corridor Project

Workers successfully completed shipment of 220 billet boxes of excess uranium, or about half of the total to be shipped from the 300 Area to the DOE Portsmouth Site in Ohio. The team has also begun detailed planning to accelerate "skyline reduction" activities in the 300 Area, with the intent to demolish three structures there by the end of September.

Spent Nuclear Fuel Project

Since January 1, five more loads of spent nuclear fuel have been removed from the K-West Basin, moving about 25 tons of irradiated uranium and 750,000 curies of radioactivity away from the Columbia River shore line.

Spent Nuclear Fuel Project

Project workers successfully dried five loads of spent fuel from the K-West Basin in the Cold Vacuum Drying Facility and shipped them to Hanford's central plateau, where they were placed in dry, interim storage in steel tubes beneath the Canister Storage Building.

Spent Nuclear Fuel Project

We successfully proposed major baseline changes and breakthrough initiatives to accelerate fuel movement out of the K-East Basin, improve processing in the K-West Basin and the Cold Vacuum Drying Facility, and gear up for additional handling capacity in the Canister Storage Building. In addition to process improvements, workers are being trained so that work can proceed on multiple shifts and, ultimately, around the clock.

The River

Environmental Restoration Along the River

Demolition began in February on the fourth surplus production reactor at Hanford to undergo the "cocooning" process. The Bechtel Hanford team will demolish all but 20% of the existing D Reactor structure that, like the other Hanford surplus reactors, sits near the Columbia River. The graphite reactor block will be isolated or "cocooned" for 75 years. During that time, a permanent disposal plan will be developed and radiation will have decayed to manageable levels. In the background is DR Reactor, where the cocooning effort is about 90% complete.

Transforming the Plateau

Central Plateau Planning & Integration

To assist DOE in site-wide integrated planning, this team has developed breakthrough initiatives focused on two of the ultimate outcomes that will help transform the central plateau to a place for long-term waste management and storage: completion of the Spent Nuclear Fuel Project and deactivation of the Plutonium Finishing Plant. This quarter, the team also drafted 15 central plateau master schedules for review and comment by state and federal regulators.

Fast Flux Test Facility

In January, the Secretary of Energy signed a Record of Decision calling for permanent deactivation of the FFTF. The Project team is supporting DOE efforts to reestablish appropriate Tri-Party Agreement milestones for the deactivation. FFTF staff also continues to upgrade and repair fuel handling systems and equipment that will be needed to drain the reactor's sodium coolant and remove its fuel assemblies for the deactivation.

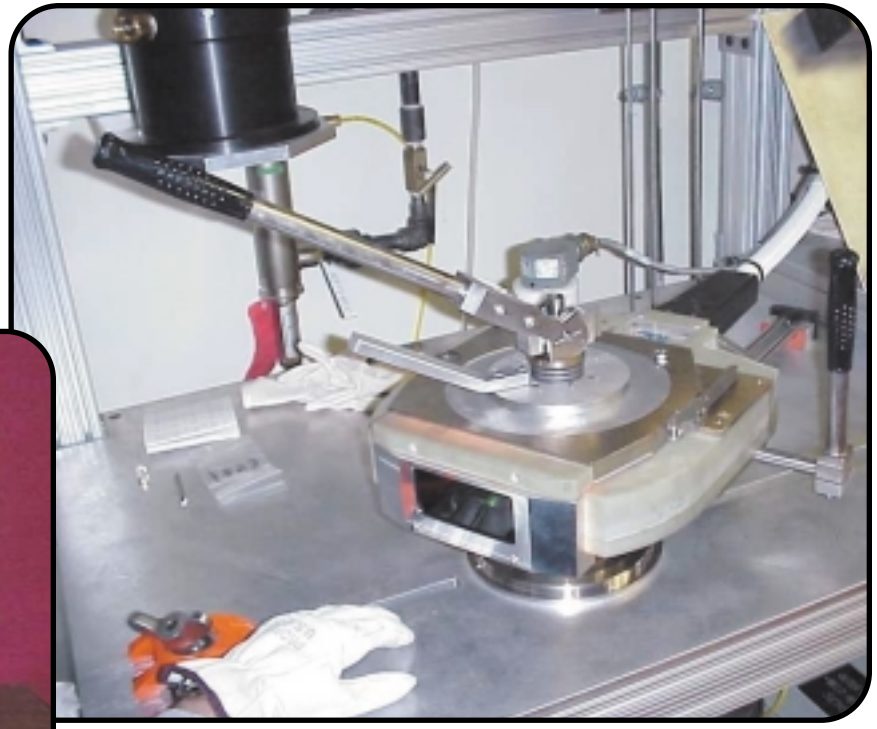
The Plateau

Nuclear Material Stabilization

Nuclear operator Brett Martin places a can of residues into a "pipe overpack container" inside a standard Department of Transportation drum and prepares it for shipping. The Plutonium Finishing Plant (PFP) residues team finished repackaging a material called "Rocky Flats ash" and shipped it to the Central Waste Complex for interim storage four weeks ahead of a Tri-Party Agreement milestone. The material will ultimately be disposed at the Waste Isolation Pilot Plant in New Mexico. The residues were packaged using a process called pipe-and-go, developed at Rocky Flats, that reduces waste volume, eliminates unnecessary processing and minimizes the radiation dose to workers.

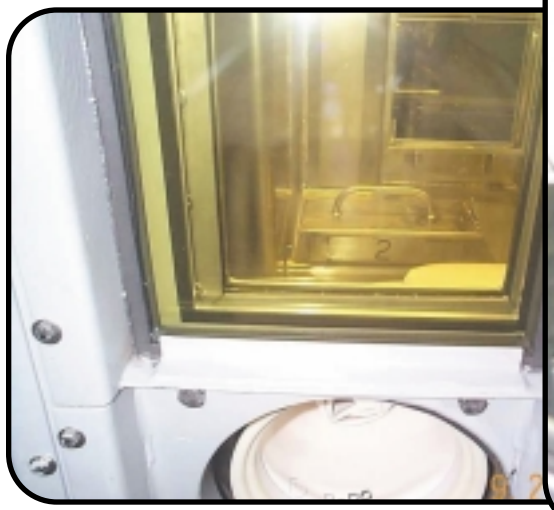
Nuclear Material Stabilization

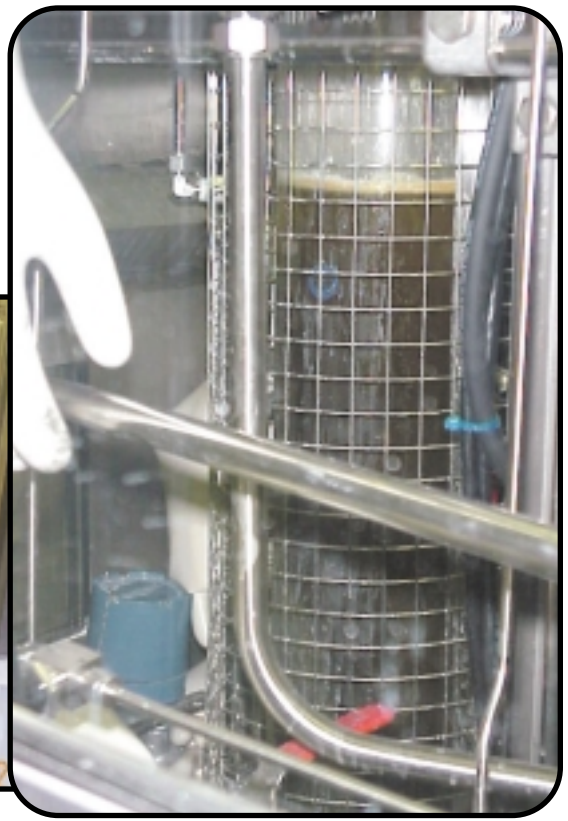
New equipment called an Outer Can Welder arrived in March and is undergoing tests prior to a projected April startup. The Outer Can Welder overpacks and seals plutonium packaged in two nested inner containers into a slightly larger container. The welder head features a viewing window for monitoring the automatic welding process. Hanford will likely be the first Department of Energy site to package in full compliance with the new triple-container national standard for safe long-term storage of plutonium.



Nuclear Material Stabilization

More than 10% of PFP's 4,000 liters of plutonium solutions has been stabilized to date. Fluor Hanford teamed with the Pacific Northwest National Laboratory (PNNL) on a precipitation process that removes plutonium from the solutions, leaving a powder that can be stabilized in a muffle furnace, then packaged for long-term storage. Because different solution types are in the inventory, PNNL is working to further enhance the process and evaluate other reagents. Shown here are a vessel in which magnesium hydroxide is mixed with plutonium solution, and a container of the resulting powder, after precipitation, moving into a furnace.





Despite all the potentially high-risk plutonium stabilization processes operating in parallel, the PFP staff has recorded more than 1.5 million safe work hours, thanks in part to an active Employee Zero Accident Council which helped implement several workplace safety initiatives.

Waste Management

A March campaign at the 242-A Evaporator processed about 840,000 gallons of highly radioactive waste pumped from underground double-shell waste storage tanks. By extracting excess water from the waste, the process opened up about 680,000 gallons worth of usable tank space and reduced the volume of contaminated liquids on the site. In this photo from an earlier Evaporator run, Nuclear Chemical Operator Alan Hammack monitors process operations from the condenser room while co-workers David Vasquez and Jerry Borrowman observe.

The Plateau

Waste Management

Nuclear Chemical Operator Ben Hovley places an empty 55-gallon drum in a drum crusher at T Plant, pushes the start button and 35 seconds later removes a "puck" from the crusher. The flattened drums are packaged as low-level waste and sent to the burial grounds. At one time, the contaminated drums might have contained T Plant waste, but in performing cleanup of the Plant canyon, the drums simply represented containers to be disposed of.

Waste Management

As an outcome of its technology teaming relationship with Fluor Hanford, the Pacific Northwest National Laboratory furnished a report on converting the Waste Receiving and Processing (WRAP) Facility low-level waste glovebox for a combined low-level waste/transuranic (TRU) waste mission. When the necessary procedural and physical capacity changes outlined in the report are made, workers will be able to process greater numbers of TRU waste drums at WRAP.

Environmental Restoration on the Plateau

Concrete core samples for characterization data were collected from the floor of the cells under the U Plant canyon with this remote concrete coring system. Traditional methods for obtaining equivalent concrete core samples would require physical entry into the process cells, which is not possible due to the highly radioactive environment of the cells. Deploying this new technology enabled the work to proceed safely.

Preparing for the Future

The Future

Economic Transition

Gunderson Northwest obtained excess rail from Hanford to expand its rail-car refurbishing business in Kennewick. The photo shows the rail being loaded for shipment to Gunderson; Reactors D and DR are in the background. In addition, Fluor Hanford assisted the Tri-Cities Asset Reinvestment Company in obtaining more than $1 million in excess Hanford assets, including lead bricks, two gantry cranes, an x-ray machine and lab equipment, for sale or reuse to help diversify the local economy.

The Future

Economic Transition

A grant from the Fluor Foundation helped fund marketing studies to be conducted by students at Washington State University–Tri-Cities. One study will be used to improve the market for a local software knowledge and content-management firm called WAYDAI, an acronym for What Are You Doing About It. The other study, for the Tri-Cities Visitor and Convention Bureau, is focused on expanding the area's tourism market.

The Future

Volpentest HAMMER Training & Education Center

One way HAMMER serves Hanford is through mock-ups that prepare workers for new or unfamiliar tasks or technology. In January, a mock-up helped prepare craft workers for a project in which they'll apply polyurea coating to the walls of tank-farm valve and pump pits. Here, painters receive direction from an instructor before returning to the confined space of the training prop. "What I liked about this mock-up was the opportunity to be involved in a job before it starts," said Ed Carter, business manager and chief steward, Local 1789 Painters Union. "At HAMMER, we were able to get safety issues resolved ahead of time and work extensively with a material we don't use on a daily basis, and that builds competence and confidence."

Final adjustments are made to a craft worker's personal protective equipment before he begins polyurea coating training at HAMMER. This kind of hands-on training keeps workers safe on the job. In late February, the 75-person HAMMER workforce itself was recognized for achieving a four-year-long record of 750,000 work hours without a lost-workday injury.

The Future

Volpentest HAMMER Training & Education Center

HAMMER, as DOE's Beryllium Training Center of Excellence, hosted a workshop in February during which DOE sites showcased exemplary programs, shared lessons learned, developed partnerships among training professionals and beryllium-affected workers, and established a procedure to identify training needs. Industrial Hygienist Bill Robinson introduced speakers via video teleconference (top photo), while Senior Training Specialist Lynn Gates facilitated a breakout session. Information from the workshop will be used to develop training that can serve as a model for emerging health and safety issues. Workshop results were shared at a subsequent Beryllium Rule Workshop in March in Washington, D.C.

Support & Services

Spent Nuclear Fuel Project/Waste Management

Machinists Chuck Hutchinson (left) and Fred Bryant test the first of five remotely activated grapplers for removing Shippingport reactor fuel now stored at T Plant. The machine shop run by Fluor Hanford subcontractor DynCorp Tri-Cities Services was called upon to fabricate five of the grapplers. Working closely with the T Plant engineering staff, they completed fabrication and testing of the first unit two weeks ahead of schedule.

Support & Services

Spent Fuel Basket Fabrication

By December 31, 2002, the onsite Spent Nuclear Fuel Basket Fabrication team will have fabricated more than 2,130 storage and scrap baskets to support fuel removal from the K Basins. To date, 396 baskets have been completed.

Support & Services

Waste Minimization

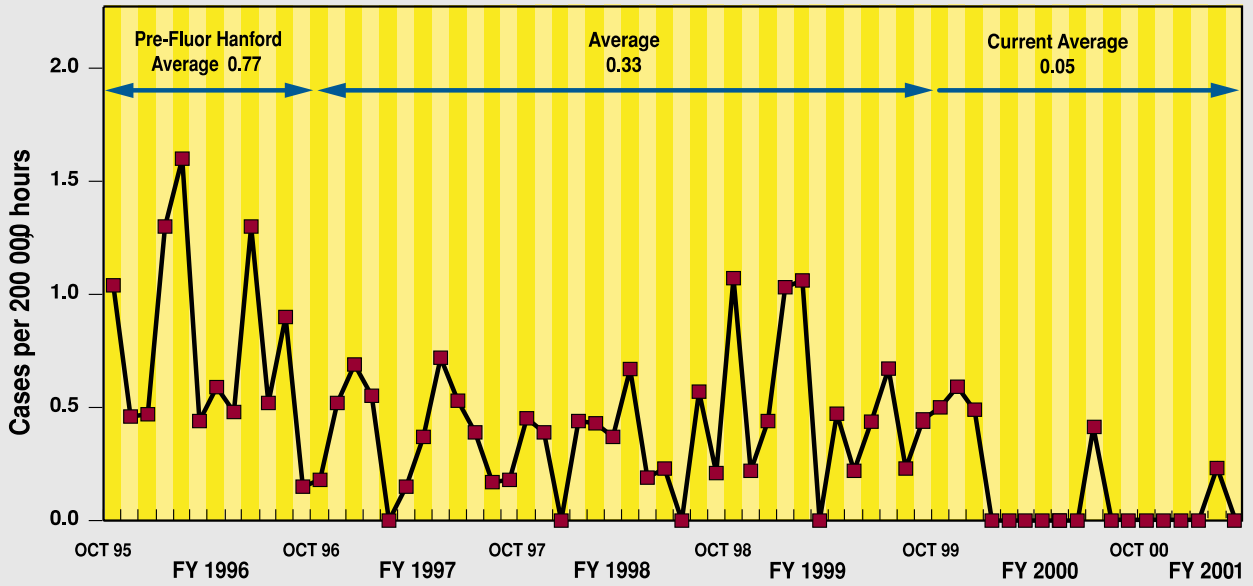
Two dozen large, unused, solid aluminum filter frames, each weighing more than 1,000 pounds and fabricated 20 years ago for use in N Reactor, were successfully recycled. A team effort by DOE, DynCorp Tri-Cities Services and Bechtel Hanford worked within the bounds of a DOE moratorium on recycling scrap metals to successfully ship the 13 tons of aluminum to Pacific Recycling in Kennewick. The effort avoided $8,000 in waste disposal costs at the onsite Environmental Restoration Disposal Facility.

ENVIRONMENT, SAFETY & HEALTH

Safety Performance

Everyone on the Fluor Hanford team continues to conduct work in a safe manner. In 15 months, Fluor Hanford has incurred only three lost away workday injuries, averaging less than one lost away workday injury per 4 million hours worked. And the OSHA recordable case rate has remained stable at 1.5 cases per 200,000 work hours. This rate is 40% lower than the national average for DOE contractors for calendar year 2000. Among the safety records set this quarter: the Waste Management Project team and subcontractor DynCorp Tri-Cities Services both reached the 2 million safe work hours plateau in February.

Lost Away Workday Injury/Illness Rate



ES&H

Voluntary Protection Program

Voluntary Protection Program "Merit" status for Fluor Hanford safeguards and security subcontractor Day & Zimmerman Protection Technology Hanford (PTH) was upgraded to "Star" status. DOE also awarded "Star" status to Fluor Hanford subcontractor DynCorp Tri-Cities Services. Within the DOE complex, "Star" status has only been awarded to 10 Voluntary Protection Programs. The designation means the organizations have demonstrated superior workplace safety. The award also places them in a mentoring role for other businesses at Hanford and elsewhere. DOE Richland Assistant Manager Shirley Olinger and Fluor Hanford Vice President John Wood (at right) present "Star" awards to PTH President Al Bowser (left photo) and DynCorp Tri-Cities Services President Bob Frix (right photo).

Restoring the River Corridor

Dispose about 140 metric tons of uranium fuel and scrap in Hanford's low-level waste burial grounds by June 30.

In the April-to-June quarter, remove, dry and place in storage 10-12 more loads of spent nuclear fuel from the K-West Basin, effectively moving 50-60 tons and up to 1.8 million curies of radioactivity away from the river shore.

Engineer and install fuel-removal equipment in the K-East Basin.

Meet a Tri-Party Agreement June milestone to submit an approved sludge-handling conceptual design document to the Washington Department of Ecology.

Complete the workscope for Tri-Party Agreement Milestone M-89-02 by moving the remaining 324 Building B Cell low-level wastes and transuranic debris away from the 300 Area by July 31.

Resume dismantling of the High Temperature Sodium Test Facility in the 337 Building.

Revise work plans to address higher-than-expected contamination levels encountered in cleanout of the fuel transfer pit at the former Plutonium Recycle Test Reactor (309 Facility). Completion of the work is now projected for August.

Transforming the Central Plateau

Provide DOE with breakthrough initiatives and recommendations, and the basis for a master schedule for the central plateau, by the end of June.

Efficiencies gained from process improvements during the packaging of Rocky Flats ash are expected to benefit the processing of Hanford ash residues, scheduled to get under way in April. The pipe-and-go process is allowing this work to begin a year earlier than originally planned, saving $1.6 million in lifecycle costs.

Install equipment to remove stored Shippingport (PA) spent fuel assemblies from T Plant.

Initiate non-manned, remote entry into the 224-T Building process cells in April for characterization purposes to ensure there's no potential risk to the public or environment. The cells have not been used since 1956 and not entered since the 1980s.

Accelerate movement of TRU waste to New Mexico by completing at least five, and potentially seven, shipments this fiscal year against a plan for four shipments. The potential acceleration is due to efficiencies gained in the TRU Program activities. Six shipments have been made to date, three of them in Fiscal Year 2001.

Preparing for the Future

Continue to support economic diversification and growth. Fluor Global Location Strategies will assist the Tri-City Industrial Development Council (TRIDEC) with corporate visit planning and Tri-City tours by delegates to the annual meeting of the International Development Research Council, an international property and real-estate management group meeting in Seattle in May.

Support TRIDEC's Commerce Appreciation Retention & Expansion, or C.A.R.E., program, which is focused on helping existing community businesses expand and prosper.

Develop a plan to merge emergency response radiological transportation training of the Transportation Emergency Preparedness Program with the transportation training of the Waste Isolation Pilot Plant. HAMMER's leadership in combining the two programs will eliminate redundant training.

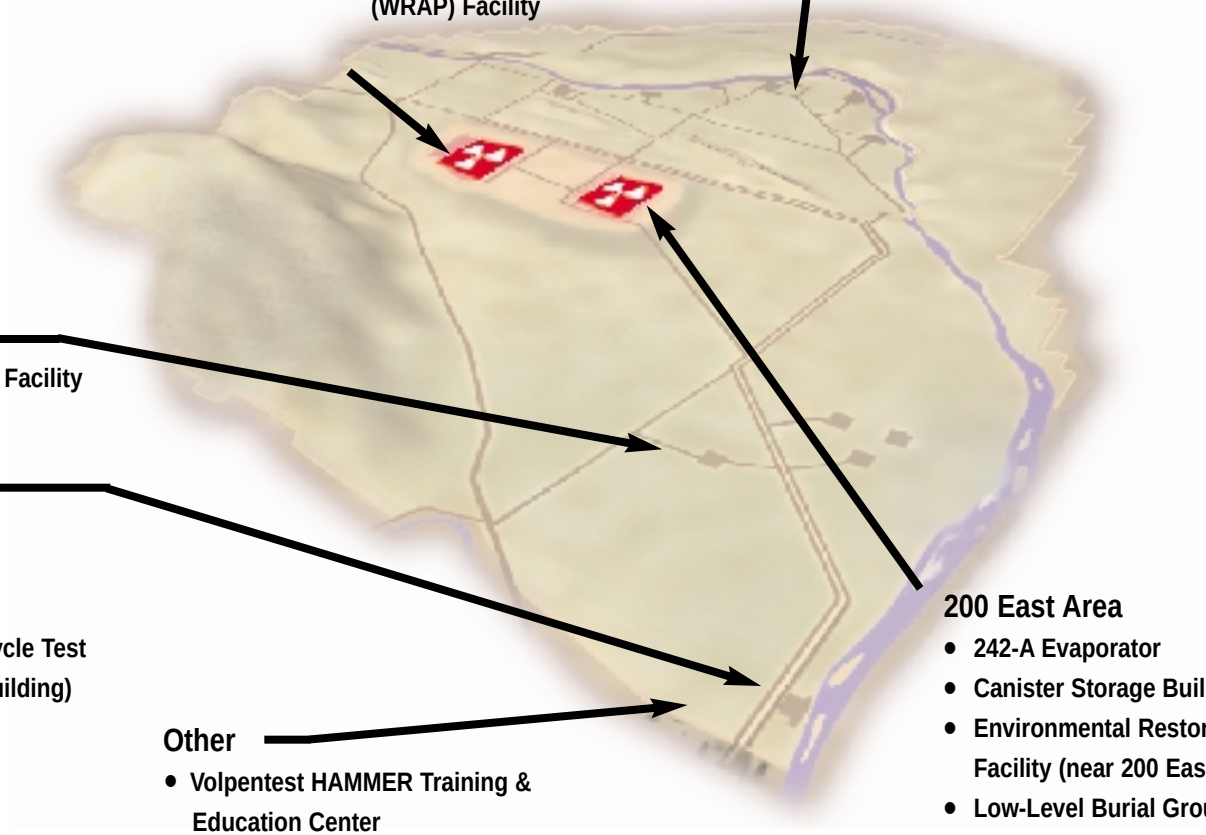
By mid-April, complete a six-week Fire Department Recruit Academy at HAMMER. It is the 14th joint training effort between Hanford and City of Kennewick fire departments.

Hanford Site Map

Hanford Facilities Featured in This Report

200 West Area
- 224-T
- Central Waste Complex
- Low-Level Burial Grounds
- Plutonium Finishing Plant
- T Plant
- U Plant
- Waste Receiving & Processing (WRAP) Facility

100 Area
- Cold Vacuum Drying Facility
- K Basins (for K East and K West Reactors)
- Reactors D, DR, and N



400 Area
- Fast Flux Test Facility

300 Area
- 324 Building
- 335 Building
- 337 Building
- Plutonium Recycle Test Reactor (309 Building)

Other
- Volpentest HAMMER Training & Education Center

200 East Area
- 242-A Evaporator
- Canister Storage Building
- Environmental Restoration Disposal Facility (near 200 East)
- Low-Level Burial Grounds

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